

```
import pandas as pd
```

```
df = pd.read_excel(r'C:\Users\LENOVO\Downloads\Flight_Information.xlsx')  
print(df)
```

	FlightID	FlightNumber	Airline	Destination	Status
0	1001	FL1102	Airline D	Houston	On Time
1	1002	FL1435	Airline B	Chicago	On Time
2	1003	FL1860	Airline A	New York	Cancelled
3	1004	FL1270	Airline C	Chicago	Delayed
4	1005	FL1106	Airline C	New York	Delayed
...
195	1196	FL1863	Airline C	New York	Cancelled
196	1197	FL1742	Airline A	New York	Delayed
197	1198	FL1240	Airline D	Los Angeles	Cancelled
198	1199	FL1563	Airline D	Chicago	On Time
199	1200	FL1095	Airline B	Houston	On Time

```
[200 rows x 5 columns]
```

```
df.isnull().sum()
```

```
FlightID      0  
FlightNumber  0  
Airline       0  
Destination   0  
Status       0  
dtype: int64
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
RangeIndex: 200 entries, 0 to 199
```

```
Data columns (total 5 columns):
```

#	Column	Non-Null Count	Dtype
0	FlightID	200 non-null	int64
1	FlightNumber	200 non-null	object
2	Airline	200 non-null	object
3	Destination	200 non-null	object
4	Status	200 non-null	object

```
dtypes: int64(1), object(4)
```

```
memory usage: 7.9+ KB
```

Is there a relationship between the Airline and Flight Status?

null hypothesis - There's no relation between flight status and airline
alternative hypothesis - There is relation between flight status and airline

```
from scipy.stats import chi2_contingency

table = pd.crosstab(df['Status'], df['Airline']) # pd.crosstab creates frequency table
print(table)
```

Airline	Airline A	Airline B	Airline C	Airline D
Status				
Cancelled	18	9	15	18
Delayed	15	10	15	18
On Time	15	22	19	26

```
#now running chi square test

chi2, p_value, dof, expected = chi2_contingency(table)

print(f'Chi2 value is {chi2}, p value is {p_value}')
```

Chi2 value is 5.026692061852325, p value is 0.5403942477512074

Here p value is 0.54 which is above 0.05, thus it fails to reject null hypothesis. We can say there is no relation between between flight status and airline.

Note — When to Use `chi2_contingency()` and `chisquare()`

`chi2_contingency()` → Used to test if there is a relationship between two categorical variables.
Example: Is there a relationship between Airline and Flight Status? → Needs a 2D contingency table (rows × columns).

`chisquare()` → Used to check if observed data fits an expected distribution (goodness of fit test). It needs one categorical column. Example: Do the observed flight delays match the expected distribution? → Needs observed vs expected frequencies (1D array).

```
df
```

	FlightID	FlightNumber	Airline	Destination	Status
0	1001	FL1102	Airline D	Houston	On Time
1	1002	FL1435	Airline B	Chicago	On Time
2	1003	FL1860	Airline A	New York	Cancelled
3	1004	FL1270	Airline C	Chicago	Delayed
4	1005	FL1106	Airline C	New York	Delayed
...
195	1196	FL1863	Airline C	New York	Cancelled

196	1197	FL1742	Airline A	New York	Delayed
197	1198	FL1240	Airline D	Los Angeles	Cancelled
198	1199	FL1563	Airline D	Chicago	On Time
199	1200	FL1095	Airline B	Houston	On Time

[200 rows x 5 columns]

Check if all airlines have equal number of flights

null hypothesis - all flights have equal no. of flights ```` alternative hypothesis - all flights does not have equal no. of flights

```
count_flight = df['Airline'].value_counts().sort_values()
print(count_flight)
```

```
Airline
Airline B    41
Airline A    48
Airline C    49
Airline D    62
Name: count, dtype: int64
```

```
total = sum(count_flight)
print(total)
```

200

```
len(count_flight)
```

4

```
expected = [total/ len(count_flight)]* len(count_flight)
print(expected)
```

[50.0, 50.0, 50.0, 50.0]

```
from scipy.stats import chisquare
```

```
#performing chisquare test
```

```
chi2, p_value = chisquare(count_flight, expected)
```

```
print(f'chi2 is {chi2} and p_value is {p_value}')
```

chi2 is 4.6 and p_value is 0.2035420816793649

Here p_value is 0.20 is above 0.05, it fails to reject null hypothesis. So more or less all flights have equal no. of flights

Anova Test - It needs numerical columns

Lets run anova test on uber dataset. To check if droploaction affects customer ratings null hypothesis = no diffrenece alternative = difference is there

```
import pandas as pd
```

```
uber_df = pd.read_csv(r'C:\Users\LENOVO\Desktop\Python\Internshala\Py_Stats_Z_Test_VS_T_Test_Uber_Dataset\archive (1)\ncr_ride_bookings.csv')  
print(uber_df)
```

ID \	Date	Time	Booking ID	Booking Status	Customer
0	2024-03-23	12:29:38	"CNR5884300"	No Driver Found	
"CID1982111"					
1	2024-11-29	18:01:39	"CNR1326809"	Incomplete	
"CID4604802"					
2	2024-08-23	08:56:10	"CNR8494506"	Completed	
"CID9202816"					
3	2024-10-21	17:17:25	"CNR8906825"	Completed	
"CID2610914"					
4	2024-09-16	22:08:00	"CNR1950162"	Completed	
"CID9933542"					
...
...					
149995	2024-11-11	19:34:01	"CNR6500631"	Completed	
"CID4337371"					
149996	2024-11-24	15:55:09	"CNR2468611"	Completed	
"CID2325623"					
149997	2024-09-18	10:55:15	"CNR6358306"	Completed	
"CID9925486"					
149998	2024-10-05	07:53:34	"CNR3030099"	Completed	
"CID9415487"					
149999	2024-03-10	15:38:03	"CNR3447390"	Completed	
"CID4108667"					

VTAT \	Vehicle Type	Pickup Location	Drop Location	Avg
0	eBike	Palam Vihar	Jhilmil	
NaN				
1	Go Sedan	Shastri Nagar	Gurgaon Sector 56	
4.9				
2	Auto	Khandsa	Malviya Nagar	
13.4				
3	Premier Sedan	Central Secretariat	Inderlok	
13.1				
4	Bike	Ghitorni Village	Khan Market	
5.3				

...
149995	Go Mini	MG Road	Ghitorni
10.2			
149996	Go Mini	Golf Course Road	Akshardham
5.1			
149997	Go Sedan	Satguru Ram Singh Marg	Jor Bagh
2.7			
149998	Auto	Ghaziabad	Saidulajab
6.9			
149999	Premier Sedan	Ashok Park Main	Gurgaon Sector 29
3.5			

	Avg CTAT	...	Reason for cancelling by Customer \
0	NaN	...	NaN
1	14.0	...	NaN
2	25.8	...	NaN
3	28.5	...	NaN
4	19.6	...	NaN
...
149995	44.4	...	NaN
149996	30.8	...	NaN
149997	23.4	...	NaN
149998	39.6	...	NaN
149999	33.7	...	NaN

Cancelled Rides by Driver	Driver Cancellation Reason
Incomplete Rides \	
0	NaN
NaN	
1	NaN
1.0	
2	NaN
NaN	
3	NaN
NaN	
4	NaN
NaN	
...	...
...	
149995	NaN
NaN	
149996	NaN
NaN	
149997	NaN
NaN	
149998	NaN
NaN	
149999	NaN

NaN

	Incomplete Rides Reason	Booking Value	Ride Distance	Driver Ratings \
0	NaN	NaN	NaN	NaN
1	Vehicle Breakdown	237.0	5.73	NaN
2	NaN	627.0	13.58	4.9
3	NaN	416.0	34.02	4.6
4	NaN	737.0	48.21	4.1
...
149995	NaN	475.0	40.08	3.7
149996	NaN	1093.0	21.31	4.8
149997	NaN	852.0	15.93	3.9
149998	NaN	333.0	45.54	4.1
149999	NaN	806.0	21.19	4.6

	Customer Rating	Payment Method
0	NaN	NaN
1	NaN	UPI
2	4.9	Debit Card
3	5.0	UPI
4	4.3	UPI
...
149995	4.1	Uber Wallet
149996	5.0	UPI
149997	4.4	Cash
149998	3.7	UPI
149999	4.9	Credit Card

[150000 rows x 21 columns]

uber_df.info()

```
<class 'pandas.core.frame.DataFrame'>  
RangeIndex: 150000 entries, 0 to 149999  
Data columns (total 21 columns):
```

#	Column	Non-Null Count	Dtype
0	Date	150000 non-null	object

1	Time	150000	non-null	object
2	Booking ID	150000	non-null	object
3	Booking Status	150000	non-null	object
4	Customer ID	150000	non-null	object
5	Vehicle Type	150000	non-null	object
6	Pickup Location	150000	non-null	object
7	Drop Location	150000	non-null	object
8	Avg VTAT	139500	non-null	float64
9	Avg CTAT	102000	non-null	float64
10	Cancelled Rides by Customer	10500	non-null	float64
11	Reason for cancelling by Customer	10500	non-null	object
12	Cancelled Rides by Driver	27000	non-null	float64
13	Driver Cancellation Reason	27000	non-null	object
14	Incomplete Rides	9000	non-null	float64
15	Incomplete Rides Reason	9000	non-null	object
16	Booking Value	102000	non-null	float64
17	Ride Distance	102000	non-null	float64
18	Driver Ratings	93000	non-null	float64
19	Customer Rating	93000	non-null	float64
20	Payment Method	102000	non-null	object

dtypes: float64(9), object(12)
memory usage: 24.0+ MB

```
subset = uber_df[['Drop Location', 'Customer Rating']]
```

```
subset['Customer Rating'].fillna(subset['Customer Rating'].mean(),  
inplace=True)
```

C:\Users\LENOVO\AppData\Local\Temp\ipykernel_4880\551544222.py:1:
FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained assignment using an inplace method.
The behavior will change in pandas 3.0. This inplace method will never work because the intermediate object on which we are setting values always behaves as a copy.

For example, when doing 'df[col].method(value, inplace=True)', try using 'df.method({col: value}, inplace=True)' or df[col] = df[col].method(value) instead, to perform the operation inplace on the original object.

```
subset['Customer Rating'].fillna(subset['Customer Rating'].mean(),  
inplace=True)
```

C:\Users\LENOVO\AppData\Local\Temp\ipykernel_4880\551544222.py:1:
SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation:
https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
subset['Customer Rating'].fillna(subset['Customer Rating'].mean(),
inplace=True)
```

```
subset
```

	Drop Location	Customer Rating
0	Jhilmil	4.404584
1	Gurgaon Sector 56	4.404584
2	Malviya Nagar	4.900000
3	Inderlok	5.000000
4	Khan Market	4.300000
...
149995	Ghitorni	4.100000
149996	Akshardham	5.000000
149997	Jor Bagh	4.400000
149998	Saidulajab	3.700000
149999	Gurgaon Sector 29	4.900000

```
[150000 rows x 2 columns]
```

```
subset.isnull().any(axis=1)
```

0	False
1	False
2	False
3	False
4	False

...	...
149995	False
149996	False
149997	False
149998	False
149999	False

```
Length: 150000, dtype: bool
```

```
## creating groups
```

```
groups = [g['Customer Rating'] for _, g in subset.groupby('Drop
Location')]
print(groups)
```

[11	4.404584
231	4.600000
331	3.800000
680	4.404584
682	4.404584
...	...
149293	4.500000
149329	4.200000
149567	4.200000
149723	4.300000


```

149810    4.700000
Name: Customer Rating, Length: 850, dtype: float64, 9    4.404584
696      4.500000
834      4.300000
883      5.000000
1061     4.300000
...
149068    4.900000
149387    4.404584
149519    4.404584
149705    5.000000
149868    4.404584
Name: Customer Rating, Length: 845, dtype: float64, 60    3.300000
143      4.700000
529      4.600000
688      4.404584
1048     3.800000
...
149334    3.000000
149620    4.404584
149676    4.400000
149856    4.404584
149996    5.000000
Name: Customer Rating, Length: 856, dtype: float64, 234    5.000000
518      4.900000
676      4.300000
1090     3.800000
1185     4.404584
...
148438    5.000000
148509    5.000000
148880    4.404584
149175    4.200000
149504    4.404584
Name: Customer Rating, Length: 836, dtype: float64, 18    4.404584
24      4.600000
989      4.404584
1006     4.404584
1470     3.900000
...
149416    4.404584
149716    4.404584
149770    4.404584
149911    4.404584
149975    4.500000
Name: Customer Rating, Length: 830, dtype: float64, 45    4.404584
46      4.404584
215     4.404584
867     4.404584

```

```

1060      4.300000
...
148886    4.404584
149321    4.900000
149430    3.900000
149785    4.404584
149986    5.000000
Name: Customer Rating, Length: 784, dtype: float64, 345      4.404584
679      4.300000
736      4.500000
779      3.900000
840      4.200000
...
149370    4.600000
149418    4.600000
149640    5.000000
149829    4.404584
149830    4.404584
Name: Customer Rating, Length: 875, dtype: float64, 185      3.900000
665      4.800000
851      4.400000
1012     5.000000
1211     4.500000
...
148842    4.700000
148947    4.404584
148990    4.404584
149372    5.000000
149528    4.100000
Name: Customer Rating, Length: 857, dtype: float64, 258      4.900000
644      4.900000
667      4.700000
901      4.900000
924      4.400000
...
149181    4.404584
149204    4.800000
149720    4.200000
149820    4.900000
149899    3.000000
Name: Customer Rating, Length: 861, dtype: float64, 362      4.404584
429      4.500000
532      4.404584
821      4.300000
1017     5.000000
...
149122    4.300000
149312    4.900000
149510    4.404584

```

```

149603      4.404584
149836      4.404584
Name: Customer Rating, Length: 851, dtype: float64, 96      4.800000
458         4.600000
632         4.900000
739         4.404584
893         4.404584
...
149399      4.200000
149584      4.600000
149745      5.000000
149796      5.000000
149954      4.404584
Name: Customer Rating, Length: 936, dtype: float64, 129      4.300000
175         4.900000
406         5.000000
863         4.404584
1283        4.404584
...
148715      4.400000
148948      3.900000
149091      4.404584
149407      3.200000
149992      4.404584
Name: Customer Rating, Length: 815, dtype: float64, 140      4.100000
150         3.700000
240         4.200000
618         4.500000
1049        4.404584
...
149583      4.404584
149635      4.404584
149903      4.100000
149950      4.200000
149983      5.000000
Name: Customer Rating, Length: 843, dtype: float64, 56      4.404584
588         4.500000
886         4.404584
1166        4.300000
1249        4.800000
...
149444      4.200000
149472      4.700000
149494      4.404584
149779      4.404584
149813      4.600000
Name: Customer Rating, Length: 824, dtype: float64, 99      4.404584
200         4.404584
527         4.404584

```

584	4.404584
719	4.400000
...	
148622	4.404584
148692	4.404584
148876	4.600000
148958	4.700000
149931	4.600000
Name: Customer Rating, Length: 815, dtype: float64, 105	
247	4.200000
381	4.900000
464	4.404584
585	4.600000
...	
149385	4.300000
149455	4.404584
149580	4.404584
149622	4.900000
149709	4.404584
Name: Customer Rating, Length: 875, dtype: float64, 25	
137	4.800000
936	4.404584
1053	4.300000
1405	4.600000
...	
148660	4.600000
148957	4.500000
149218	4.404584
149258	4.404584
149636	4.300000
Name: Customer Rating, Length: 815, dtype: float64, 54	
212	5.000000
444	3.800000
515	3.800000
709	4.404584
...	
149249	4.404584
149358	4.404584
149394	4.600000
149475	4.600000
149712	4.300000
Name: Customer Rating, Length: 917, dtype: float64, 184	
211	4.800000
549	4.800000
729	4.404584
1231	3.500000
...	
149325	4.404584
149415	4.900000

```

149544    4.404584
149808    4.404584
149876    4.300000
Name: Customer Rating, Length: 853, dtype: float64, 139    4.404584
182      4.404584
485      3.000000
517      4.900000
909      4.500000

...
147264    3.900000
147306    4.300000
148220    5.000000
148361    3.500000
148795    4.404584
Name: Customer Rating, Length: 792, dtype: float64, 21    4.200000
28      4.404584
112     4.400000
319     4.200000
422     4.800000

...
149317    4.404584
149413    4.404584
149604    3.700000
149837    4.600000
149846    4.900000
Name: Customer Rating, Length: 871, dtype: float64, 50    4.404584
118     4.404584
126     3.700000
447     4.404584
649     4.404584

...
149435    4.404584
149599    4.700000
149725    4.400000
149912    4.404584
149972    4.300000
Name: Customer Rating, Length: 826, dtype: float64, 120    4.900000
313     3.100000
439     4.404584
482     4.404584
538     4.404584

...
148045    4.400000
148134    4.500000
148339    4.404584
149065    4.300000
149203    4.900000
Name: Customer Rating, Length: 804, dtype: float64, 107    4.100000
230     4.900000

```

238	4.404584
560	4.400000
666	4.300000
...	
148765	4.900000
148813	4.800000
149063	4.600000
149684	4.404584
149695	3.300000
Name: Customer Rating, Length: 847, dtype: float64, 382	
408	4.600000
475	4.500000
862	4.600000
1449	4.404584
...	
148734	4.404584
148748	4.404584
148946	4.800000
149360	4.404584
149543	4.100000
Name: Customer Rating, Length: 873, dtype: float64, 80	
299	4.200000
346	4.600000
497	4.300000
542	4.404584
...	
149193	4.400000
149529	4.200000
149562	4.404584
149656	3.700000
149805	4.404584
Name: Customer Rating, Length: 876, dtype: float64, 40	
260	4.404584
302	4.404584
372	4.900000
641	4.400000
...	
149149	4.000000
149374	4.400000
149739	4.600000
149768	4.700000
149917	3.000000
Name: Customer Rating, Length: 808, dtype: float64, 373	
414	4.500000
861	5.000000
992	4.404584
1669	4.404584
...	
148531	4.404584

```

149491    4.404584
149742    5.000000
149842    4.300000
149853    4.404584
Name: Customer Rating, Length: 846, dtype: float64, 7    4.200000
166      4.600000
322      3.000000
393      4.404584
534      4.700000
...
149432    4.200000
149471    4.300000
149488    4.404584
149788    4.700000
149823    4.300000
Name: Customer Rating, Length: 912, dtype: float64, 97    4.404584
165      4.200000
318      4.700000
535      4.404584
812      4.404584
...
149247    4.500000
149295    4.700000
149465    4.100000
149878    5.000000
149973    4.404584
Name: Customer Rating, Length: 837, dtype: float64, 101    4.404584
294      4.600000
677      4.200000
1316     4.300000
1476     4.100000
...
147937    5.000000
147942    4.404584
148120    4.404584
148861    4.900000
149596    4.404584
Name: Customer Rating, Length: 876, dtype: float64, 171    4.700000
249      4.900000
385      4.404584
394      4.600000
421      4.404584
...
149392    4.100000
149447    4.404584
149484    4.404584
149923    4.300000
149962    4.200000
Name: Customer Rating, Length: 855, dtype: float64, 114    4.404584

```

```

173      4.300000
404      4.300000
810      4.200000
1384     4.404584
...
149629   4.404584
149693   4.500000
149761   4.404584
149956   4.404584
149976   4.600000
Name: Customer Rating, Length: 879, dtype: float64, 492      4.404584
750      4.700000
795      3.000000
1088     4.300000
1093     4.404584
...
148269   4.404584
148993   4.300000
149780   4.300000
149799   4.900000
149852   4.300000
Name: Customer Rating, Length: 867, dtype: float64, 10      4.900000
57        4.404584
565       4.100000
922       4.404584
1141      4.404584
...
149123   4.600000
149422   4.600000
149618   4.200000
149688   3.900000
149847   4.700000
Name: Customer Rating, Length: 856, dtype: float64, 159      4.404584
167      4.404584
566      4.800000
595      4.000000
658      4.900000
...
149320   5.000000
149456   4.404584
149479   4.300000
149561   4.300000
149689   5.000000
Name: Customer Rating, Length: 864, dtype: float64, 14      4.400000
17        4.404584
218      4.200000
312      4.404584
335      4.900000
...

```


149371	4.404584
149468	4.404584
149827	4.404584
149970	4.100000
149990	4.404584
Name: Customer Rating, Length: 861, dtype: float64, 239	
512	4.404584
631	4.600000
897	4.300000
987	4.404584
...	
149216	4.900000
149400	4.100000
149642	5.000000
149775	4.300000
149933	3.900000
Name: Customer Rating, Length: 878, dtype: float64, 188	
279	4.800000
347	4.200000
490	4.404584
837	4.700000
...	
149176	4.300000
149901	4.404584
149958	4.404584
149964	4.600000
149995	4.100000
Name: Customer Rating, Length: 877, dtype: float64, 13	
34	4.404584
227	4.404584
367	4.700000
551	4.900000
...	
149579	3.000000
149612	4.200000
149658	4.600000
149915	4.404584
149951	4.900000
Name: Customer Rating, Length: 815, dtype: float64, 174	
226	3.800000
277	4.100000
360	3.300000
636	3.600000
...	
149045	4.404584
149191	5.000000
149332	4.404584
149351	4.900000
149786	4.100000

```

Name: Customer Rating, Length: 808, dtype: float64, 456      4.300000
575      4.300000
638      4.404584
789      4.700000
950      4.300000
...
149617    4.600000
149752    4.404584
149825    4.700000
149871    4.100000
149885    4.404584
Name: Customer Rating, Length: 837, dtype: float64, 145      4.600000
154      4.900000
191      4.500000
416      4.200000
610      4.404584
...
149390    4.200000
149602    4.900000
149606    4.200000
149756    4.400000
149802    4.200000
Name: Customer Rating, Length: 845, dtype: float64, 102      3.800000
355      4.404584
441      4.404584
605      4.300000
609      4.800000
...
149542    4.404584
149811    3.200000
149840    4.404584
149841    4.500000
149994    4.900000
Name: Customer Rating, Length: 875, dtype: float64, 64      4.404584
203      4.200000
241      4.600000
263      4.300000
391      4.404584
...
149384    3.800000
149502    4.500000
149591    4.800000
149673    4.900000
149717    4.404584
Name: Customer Rating, Length: 824, dtype: float64, 349      4.600000
402      4.300000
966      4.900000
1296     4.404584
1712     4.600000
...

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149095      4.404584
149177      4.404584
149211      4.600000
149593      4.500000
149812      4.900000
Name: Customer Rating, Length: 891, dtype: float64, 95      4.404584
232         4.900000
419         4.404584
974         4.300000
1201        4.900000
...
148109      5.000000
148513      3.800000
148731      4.600000
148801      3.300000
149999      4.900000
Name: Customer Rating, Length: 827, dtype: float64, 1      4.404584
213         5.000000
290         4.000000
436         4.300000
608         4.404584
...
149223      4.100000
149476      4.800000
149507      4.404584
149527      4.400000
149724      4.404584
Name: Customer Rating, Length: 894, dtype: float64, 88      4.404584
219         4.300000
375         5.000000
459         4.500000
469         4.404584
...
149381      4.400000
149644      4.404584
149667      4.404584
149730      4.404584
149850      4.200000
Name: Customer Rating, Length: 878, dtype: float64, 133      4.100000
248         4.900000
327         3.700000
713         4.200000
763         4.100000
...
149520      4.404584
149548      4.000000
149747      4.404584
149803      4.404584
149864      4.300000

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Name: Customer Rating, Length: 892, dtype: float64, 51      4.500000
106      4.404584
305      4.404584
320      4.404584
1008     4.404584
...
149340    4.600000
149485    3.600000
149557    4.500000
149626    5.000000
149628    5.000000
Name: Customer Rating, Length: 828, dtype: float64, 187     4.404584
494      4.404584
558      4.900000
939      4.404584
1154     4.300000
...
149344    4.900000
149352    4.404584
149366    4.404584
149835    4.404584
149965    4.404584
Name: Customer Rating, Length: 831, dtype: float64, 403     4.404584
506      4.404584
569      3.900000
796      4.100000
803      4.300000
...
149173    4.800000
149250    4.700000
149496    4.200000
149666    4.404584
149821    4.300000
Name: Customer Rating, Length: 774, dtype: float64, 84      3.600000
561      4.400000
583      4.500000
797      4.200000
925      4.300000
...
149171    4.300000
149230    4.404584
149600    4.100000
149703    4.400000
149981    4.100000
Name: Customer Rating, Length: 801, dtype: float64, 62      4.404584
273      3.800000
374      4.404584
477      4.404584
491      4.404584

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...
148651    4.404584
149199    4.404584
149535    4.500000
149784    4.900000
149904    4.404584
Name: Customer Rating, Length: 828, dtype: float64, 103    4.800000
190       4.900000
229       4.300000
281       4.900000
336       4.800000
...
149490    4.900000
149698    4.404584
149719    4.500000
149952    4.404584
149955    4.300000
Name: Customer Rating, Length: 847, dtype: float64, 462    4.700000
582       4.404584
637       4.404584
733       4.600000
768       3.600000
...
149493    4.404584
149517    4.404584
149661    4.600000
149809    4.100000
149948    4.300000
Name: Customer Rating, Length: 856, dtype: float64, 22    3.600000
181       4.700000
192       4.300000
650       5.000000
794       4.100000
...
149406    4.404584
149469    4.200000
149595    4.404584
149782    4.800000
149804    4.500000
Name: Customer Rating, Length: 838, dtype: float64, 308    4.404584
321       4.404584
748       4.404584
957       4.404584
1290      4.700000
...
149166    4.404584
149197    4.200000
149214    4.404584
149405    4.600000

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149920    3.900000
Name: Customer Rating, Length: 850, dtype: float64, 65    4.404584
389      4.404584
579      4.600000
623      4.404584
661      4.200000
...
148778    4.200000
148915    4.404584
149395    3.100000
149402    4.600000
149672    3.800000
Name: Customer Rating, Length: 853, dtype: float64, 3    5.000000
276      4.404584
348      4.404584
430      4.404584
892      4.404584
...
149449    4.700000
149741    4.700000
149772    4.600000
149834    4.300000
149937    4.404584
Name: Customer Rating, Length: 835, dtype: float64, 71    4.404584
237      4.100000
624      4.500000
672      3.600000
835      4.404584
...
149343    5.000000
149383    4.500000
149458    4.900000
149555    4.404584
149735    4.404584
Name: Customer Rating, Length: 867, dtype: float64, 288    4.404584
470      4.400000
657      4.404584
864      4.404584
985      4.404584
...
149426    3.200000
149443    4.404584
149452    4.404584
149553    4.400000
149758    4.900000
Name: Customer Rating, Length: 841, dtype: float64, 78    4.404584
130      3.900000
710      4.800000
977      4.600000

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1276      5.000000
...
149473    4.404584
149503    4.600000
149524    4.800000
149751    4.300000
149765    4.300000
Name: Customer Rating, Length: 849, dtype: float64, 138      4.404584
466      4.700000
474      4.100000
511      4.404584
634      4.900000
...
149411    4.404584
149480    4.404584
149691    4.900000
149754    4.404584
149966    4.400000
Name: Customer Rating, Length: 838, dtype: float64, 127      4.300000
329      4.404584
337      4.404584
493      3.000000
622      4.300000
...
149744    4.200000
149831    4.100000
149927    4.700000
149987    4.500000
149993    4.700000
Name: Customer Rating, Length: 872, dtype: float64, 38      4.400000
268      4.404584
287      4.900000
409      4.100000
473      4.404584
...
149000    4.404584
149168    3.800000
149194    4.400000
149587    4.800000
149926    4.404584
Name: Customer Rating, Length: 859, dtype: float64, 90      4.404584
246      4.404584
379      4.300000
405      4.400000
533      4.404584
...
149206    4.404584
149246    3.400000
149260    5.000000

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149271    4.404584
149729    4.400000
Name: Customer Rating, Length: 836, dtype: float64, 0    4.404584
359      4.404584
1095     4.404584
1709     3.900000
1887     4.300000
...
149053    3.100000
149268    4.400000
149348    4.404584
149514    4.300000
149692    4.100000
Name: Customer Rating, Length: 855, dtype: float64, 164    4.900000
539      4.404584
548      4.404584
653      4.600000
753      4.404584
...
148743    3.500000
149003    4.700000
149112    4.404584
149262    4.200000
149997    4.400000
Name: Customer Rating, Length: 831, dtype: float64, 674    4.100000
1234      4.404584
1826      4.700000
1837      4.404584
2035      4.404584
...
149589    4.100000
149686    4.404584
149711    4.200000
149795    4.800000
149943    4.404584
Name: Customer Rating, Length: 831, dtype: float64, 244    4.900000
293      4.100000
309      3.900000
457      4.800000
552      4.500000
...
149776    4.404584
149815    4.300000
149866    4.200000
149916    4.300000
149961    4.100000
Name: Customer Rating, Length: 912, dtype: float64, 714    4.700000
1104     4.404584
1236     4.000000

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1304	4.200000
1821	4.404584
...	
148865	4.404584
149136	4.404584
149333	4.600000
149832	4.900000
149877	3.200000
Name: Customer Rating, Length: 859, dtype: float64, 41	
49	3.300000
135	4.300000
366	4.500000
387	4.600000
...	
148342	4.200000
148456	4.200000
149128	4.404584
149254	4.700000
149588	4.300000
Name: Customer Rating, Length: 856, dtype: float64, 82	
300	4.300000
643	4.600000
887	3.300000
888	4.404584
...	
149318	4.404584
149481	4.200000
149680	4.200000
149865	4.404584
149880	4.404584
Name: Customer Rating, Length: 830, dtype: float64, 161	
205	4.404584
664	4.700000
708	4.404584
1116	4.400000
...	
149144	4.300000
149251	3.900000
149347	4.404584
149844	4.100000
149848	4.404584
Name: Customer Rating, Length: 850, dtype: float64, 314	
407	4.404584
572	4.300000
670	4.200000
703	4.404584
...	
148992	4.404584
149219	4.300000

```

149794      4.400000
149968      4.500000
149971      4.200000
Name: Customer Rating, Length: 909, dtype: float64, 115      4.404584
257         4.800000
361         4.404584
816         4.404584
975         4.200000
...
148470      4.404584
148900      4.400000
148994      4.200000
149477      4.200000
149771      4.300000
Name: Customer Rating, Length: 859, dtype: float64, 157      4.404584
194         4.404584
201         4.600000
574         4.404584
697         4.700000
...
149379      4.404584
149706      4.404584
149790      4.404584
149798      4.404584
149881      3.800000
Name: Customer Rating, Length: 839, dtype: float64, 4      4.300000
15          4.900000
98          4.800000
675         4.400000
904         4.404584
...
148383      4.404584
148701      3.800000
148835      4.900000
148982      4.404584
149014      4.404584
Name: Customer Rating, Length: 874, dtype: float64, 718      4.600000
1121        4.200000
1439        4.800000
1467        4.404584
1533        4.900000
...
148956      4.300000
149019      4.500000
149375      4.200000
149675      4.404584
149934      4.600000
Name: Customer Rating, Length: 867, dtype: float64, 12      4.404584
307         4.404584

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692	4.404584
854	4.404584
940	4.600000
...	
149440	4.404584
149574	4.404584
149690	4.404584
149863	4.600000
149908	4.600000
Name: Customer Rating, Length: 841, dtype: float64, 256	
471	4.700000
590	4.300000
633	4.404584
694	4.300000
...	
148508	4.404584
148519	4.800000
148629	4.100000
148771	4.404584
149431	4.404584
Name: Customer Rating, Length: 827, dtype: float64, 155	
427	4.404584
453	4.200000
1077	4.700000
1398	4.800000
...	
148776	4.404584
148930	4.300000
149532	4.200000
149755	3.800000
149984	4.404584
Name: Customer Rating, Length: 904, dtype: float64, 732	
1445	4.900000
1546	4.200000
2185	4.404584
2201	3.100000
...	
149649	4.300000
149849	4.600000
149947	4.600000
149963	4.404584
149988	4.200000
Name: Customer Rating, Length: 832, dtype: float64, 123	
334	3.900000
660	3.800000
1691	4.404584
1849	4.500000
...	
148932	4.404584

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149071    4.404584
149330    4.404584
149670    5.000000
149870    4.404584
Name: Customer Rating, Length: 847, dtype: float64, 250    4.404584
278      4.404584
341      4.404584
531      4.404584
627      4.800000
...
149558    4.404584
149748    4.404584
149873    4.404584
149902    4.404584
149910    4.404584
Name: Customer Rating, Length: 916, dtype: float64, 119    4.404584
488      4.404584
577      4.404584
698      4.300000
1009     4.300000
...
149134    4.404584
149232    4.404584
149420    4.500000
149774    4.600000
149793    4.404584
Name: Customer Rating, Length: 799, dtype: float64, 16    4.300000
55      4.700000
592     4.300000
689     3.400000
744     4.000000
...
148884    4.404584
149026    4.200000
149266    4.404584
149607    3.800000
149960    5.000000
Name: Customer Rating, Length: 902, dtype: float64, 198    4.600000
217     5.000000
323     4.200000
342     4.404584
501     4.404584
...
148881    4.900000
149297    4.400000
149537    4.404584
149632    4.800000
149924    4.600000
Name: Customer Rating, Length: 826, dtype: float64, 2    4.900000

```

29	4.600000
35	4.200000
156	4.404584
266	3.900000
...	
148975	4.404584
149291	4.700000
149679	4.100000
149892	3.800000
149967	4.400000
Name: Customer Rating, Length: 829, dtype: float64, 37	
179	4.404584
426	4.900000
500	4.900000
550	4.200000
...	
148621	4.900000
148668	4.404584
149380	4.900000
149833	4.404584
149935	4.600000
Name: Customer Rating, Length: 869, dtype: float64, 147	
400	4.404584
467	4.400000
596	4.200000
765	4.200000
...	
149257	4.404584
149304	4.404584
149346	4.600000
149631	4.400000
149781	4.700000
Name: Customer Rating, Length: 864, dtype: float64, 20	
86	4.200000
169	4.900000
275	5.000000
536	4.200000
...	
148058	4.300000
148254	4.900000
148432	4.800000
149585	4.900000
149702	4.404584
Name: Customer Rating, Length: 844, dtype: float64, 94	
261	4.300000
351	4.700000
463	4.800000
646	4.404584
...	
148972	3.100000

```

149292    4.300000
149355    4.600000
149369    4.400000
149732    3.900000
Name: Customer Rating, Length: 867, dtype: float64, 134    4.200000
197       4.600000
224       4.404584
310       3.100000
472       4.900000
...
149160    4.900000
149261    4.200000
149478    4.100000
149566    4.200000
149760    4.404584
Name: Customer Rating, Length: 845, dtype: float64, 27    4.404584
67        4.300000
295       4.404584
461       4.600000
752       4.404584
...
148215    4.404584
148372    4.600000
148739    4.700000
148973    4.600000
148984    4.404584
Name: Customer Rating, Length: 832, dtype: float64, 629    4.404584
668       4.400000
712       4.404584
824       4.400000
1024      4.404584
...
149445    4.404584
149638    4.500000
149650    4.500000
149777    4.500000
149889    4.200000
Name: Customer Rating, Length: 856, dtype: float64, 222    4.500000
265       3.900000
350       4.300000
1146      4.600000
1165      4.404584
...
149282    4.900000
149386    3.700000
149590    4.800000
149715    3.600000
149977    4.404584
Name: Customer Rating, Length: 899, dtype: float64, 214    4.404584

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```

431      4.404584
433      3.700000
487      4.404584
509      4.900000
...
148777    4.500000
148895    4.200000
149139    4.404584
149522    4.404584
149728    4.200000
Name: Customer Rating, Length: 848, dtype: float64, 70      5.000000
209      4.900000
252      4.800000
723      4.400000
1011     4.404584
...
148500    5.000000
148614    4.300000
148630    4.700000
148913    4.300000
149159    4.404584
Name: Customer Rating, Length: 819, dtype: float64, 236      4.404584
1057     4.600000
1394     4.300000
1768     4.800000
1779     4.404584
...
149042    4.404584
149125    4.700000
149639    4.100000
149801    4.404584
149862    4.404584
Name: Customer Rating, Length: 856, dtype: float64, 5      4.600000
228      4.600000
358      4.300000
411      5.000000
521      4.600000
...
148725    4.900000
148727    4.800000
149039    4.404584
149147    4.404584
149597    4.404584
Name: Customer Rating, Length: 913, dtype: float64, 113      4.404584
146      3.800000
455      4.900000
1040     4.404584
1270     4.404584
...

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```

148525    4.404584
149010    4.600000
149189    4.404584
149220    4.000000
149893    4.800000
Name: Customer Rating, Length: 872, dtype: float64, 32    4.900000
47        4.404584
48        4.500000
324       3.100000
437       4.404584
...
148853    3.600000
149064    4.404584
149201    4.404584
149428    4.404584
149800    4.404584
Name: Customer Rating, Length: 902, dtype: float64, 74    4.900000
340       3.700000
557       4.404584
825       4.404584
857       4.100000
...
148661    4.404584
148847    4.800000
149121    4.404584
149200    4.600000
149869    4.500000
Name: Customer Rating, Length: 857, dtype: float64, 63    4.404584
111       3.900000
255       4.500000
540       4.404584
593       4.404584
...
149541    4.404584
149594    3.800000
149687    4.404584
149738    4.600000
149906    4.200000
Name: Customer Rating, Length: 890, dtype: float64, 69    4.200000
77        4.900000
195       4.300000
270       4.100000
568       4.300000
...
149669    3.600000
149722    4.404584
149861    4.200000
149872    3.800000
149939    4.100000

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Name: Customer Rating, Length: 847, dtype: float64, 125      3.700000
149      4.404584
483      4.404584
516      4.100000
724      5.000000
...
148544    4.404584
148704    5.000000
148981    4.000000
149023    4.700000
149822    5.000000
Name: Customer Rating, Length: 848, dtype: float64, 44      3.600000
66      4.404584
303      4.404584
369      4.404584
508      4.100000
...
148965    4.404584
149335    4.404584
149362    4.500000
149396    4.600000
149575    4.200000
Name: Customer Rating, Length: 866, dtype: float64, 36      4.300000
163      4.600000
193      4.404584
271      4.900000
344      4.900000
...
149005    4.200000
149368    4.404584
149613    4.404584
149764    4.600000
149783    4.100000
Name: Customer Rating, Length: 867, dtype: float64, 8        4.404584
740      4.300000
793      4.404584
1196     4.400000
1210     4.800000
...
148828    4.404584
149354    4.404584
149436    4.600000
149652    4.404584
149766    4.404584
Name: Customer Rating, Length: 866, dtype: float64, 85        4.404584
301      4.700000
415      4.404584
559      4.500000
601      4.000000

```

```

...
149158    4.200000
149515    4.404584
149619    4.200000
149701    4.404584
149807    4.300000
Name: Customer Rating, Length: 841, dtype: float64, 148    4.900000
253       3.100000
484       4.404584
525       3.600000
576       4.404584
...
149178    4.800000
149267    4.700000
149299    4.404584
149337    3.300000
149886    4.404584
Name: Customer Rating, Length: 802, dtype: float64, 23    4.900000
100       4.400000
177       4.404584
267       4.404584
296       4.100000
...
149550    4.404584
149630    4.404584
149655    4.500000
149713    4.800000
149982    4.404584
Name: Customer Rating, Length: 851, dtype: float64, 170    4.100000
291       4.300000
371       4.404584
435       4.404584
498       4.100000
...
149718    4.404584
149828    4.404584
149845    4.404584
149907    4.400000
149985    4.600000
Name: Customer Rating, Length: 887, dtype: float64, 52    4.300000
58        5.000000
73        4.404584
152       4.600000
207       3.200000
...
148832    4.300000
149076    4.404584
149615    4.404584
149704    4.200000

```

```

149979    4.404584
Name: Customer Rating, Length: 845, dtype: float64, 124    4.800000
1094      4.600000
1198      4.404584
1349      4.200000
1427      3.200000
...
149398    3.600000
149625    4.500000
149763    4.100000
149957    3.600000
149989    4.900000
Name: Customer Rating, Length: 851, dtype: float64, 245    4.404584
316       4.900000
523       4.404584
651       4.404584
1150      4.900000
...
149545    4.900000
149565    4.000000
149696    4.404584
149697    4.200000
149940    4.404584
Name: Customer Rating, Length: 836, dtype: float64, 286    4.600000
504       4.900000
599       4.700000
621       4.500000
846       4.404584
...
149408    4.404584
149610    4.404584
149665    4.300000
149819    4.404584
149855    4.500000
Name: Customer Rating, Length: 853, dtype: float64, 81    4.404584
743       3.200000
1159      4.800000
1355      4.500000
1909      4.300000
...
149070    4.404584
149132    4.500000
149530    4.800000
149601    4.500000
149737    4.700000
Name: Customer Rating, Length: 841, dtype: float64, 499    4.404584
514       3.700000
616       4.400000
780       4.000000

```

804	4.404584
...	
148926	4.404584
149401	3.800000
149533	4.404584
149791	4.404584
149882	4.300000
Name: Customer Rating, Length: 816, dtype: float64, 233	
945	4.900000
1005	4.404584
2296	5.000000
2493	4.400000
...	
149184	5.000000
149253	3.400000
149616	4.600000
149694	4.600000
149898	4.300000
Name: Customer Rating, Length: 873, dtype: float64, 72	
357	5.000000
396	4.200000
620	4.404584
878	4.404584
...	
148906	4.404584
149018	4.600000
149482	4.600000
149497	4.404584
149757	4.404584
Name: Customer Rating, Length: 859, dtype: float64, 151	
251	4.404584
280	4.200000
562	4.404584
866	4.404584
...	
148844	4.404584
149288	4.600000
149391	4.404584
149858	4.900000
149867	4.300000
Name: Customer Rating, Length: 803, dtype: float64, 31	
417	4.200000
465	3.900000
519	4.900000
652	4.200000
...	
149682	4.404584
149773	4.404584
149860	4.404584

```

149894    4.600000
149959    4.404584
Name: Customer Rating, Length: 882, dtype: float64, 199    4.404584
208      4.404584
282      3.900000
434      4.200000
522      3.700000
...
148673    4.200000
148746    4.900000
148889    4.404584
149323    4.404584
149339    4.404584
Name: Customer Rating, Length: 826, dtype: float64, 6    4.100000
87        4.404584
489       4.300000
564       5.000000
662       4.300000
...
149559    4.200000
149582    4.404584
149653    4.404584
149891    4.600000
149925    4.500000
Name: Customer Rating, Length: 901, dtype: float64, 116    4.404584
178       4.900000
496       4.700000
502       4.300000
603       4.600000
...
148810    4.404584
148856    3.100000
149508    4.600000
149564    4.404584
149879    4.600000
Name: Customer Rating, Length: 838, dtype: float64, 53    4.600000
368       4.200000
445       4.600000
480       4.404584
625       4.400000
...
149460    4.404584
149516    4.404584
149671    4.700000
149826    4.404584
149949    4.200000
Name: Customer Rating, Length: 866, dtype: float64, 153    4.404584
223       3.100000
262       5.000000

```

537	4.404584
600	4.404584
...	
148923	3.000000
149296	4.404584
149423	4.404584
149586	4.404584
149838	4.300000
Name: Customer Rating, Length: 848, dtype: float64, 388	
397	4.500000
683	4.500000
751	4.500000
831	4.404584
...	
149008	4.404584
149022	4.404584
149074	3.700000
149875	4.404584
149919	4.404584
Name: Customer Rating, Length: 864, dtype: float64, 19	
332	4.600000
413	5.000000
640	4.700000
655	4.500000
...	
148848	3.700000
148916	4.404584
149167	4.404584
149736	4.600000
149953	4.300000
Name: Customer Rating, Length: 849, dtype: float64, 328	
450	4.404584
853	4.000000
920	4.404584
1007	4.200000
...	
149581	4.600000
149637	4.404584
149660	4.200000
149944	3.900000
149945	3.600000
Name: Customer Rating, Length: 842, dtype: float64, 59	
76	4.500000
160	4.500000
871	4.600000
1055	4.404584
...	
148368	4.400000
148688	4.400000

```

148789    4.200000
148809    4.404584
148914    4.600000
Name: Customer Rating, Length: 820, dtype: float64, 418    4.600000
481       4.600000
555       4.404584
721       4.200000
969       4.900000
...
149281    4.404584
149489    4.404584
149778    4.404584
149905    4.404584
149978    4.500000
Name: Customer Rating, Length: 856, dtype: float64, 79    4.404584
128       4.400000
235       4.300000
274       4.404584
315       4.500000
...
148951    5.000000
149141    4.600000
149277    4.400000
149614    3.300000
149818    4.900000
Name: Customer Rating, Length: 875, dtype: float64, 284    4.404584
1051      4.404584
1497       3.400000
1764      4.404584
1829      4.400000
...
148862    4.500000
149187    4.404584
149427    4.300000
149573    4.404584
149792    4.200000
Name: Customer Rating, Length: 869, dtype: float64, 210    4.600000
383       4.300000
432       4.600000
547       5.000000
594       4.404584
...
148934    3.100000
149072    4.404584
149092    4.600000
149623    4.100000
149762    4.500000
Name: Customer Rating, Length: 841, dtype: float64, 180    4.404584
410       4.500000

```

```

448      4.900000
454      4.200000
916      5.000000
...
148907   3.900000
149102   4.404584
149727   4.800000
149814   4.800000
149816   4.700000
Name: Customer Rating, Length: 813, dtype: float64, 89      3.700000
204      3.400000
306      4.200000
399      4.404584
479      4.404584
...
149570   4.404584
149700   4.300000
149851   4.800000
149936   4.100000
149998   3.700000
Name: Customer Rating, Length: 844, dtype: float64, 26      4.404584
68       4.500000
136      4.404584
420      4.404584
449      4.600000
...
149551   4.700000
149643   4.404584
149648   4.300000
149733   4.404584
149941   4.404584
Name: Customer Rating, Length: 845, dtype: float64, 93      4.700000
108      4.100000
468      4.404584
503      5.000000
1776     4.900000
...
149314   4.404584
149645   4.300000
149787   5.000000
149854   4.300000
149942   4.200000
Name: Customer Rating, Length: 838, dtype: float64, 162     4.900000
370      4.404584
933      4.900000
1020     4.500000
1031     3.800000
...
149429   4.404584
149446   4.404584

```



```

149547    4.700000
149627    5.000000
149789    4.404584
Name: Customer Rating, Length: 881, dtype: float64, 202    4.100000
259      4.900000
338      3.900000
673      4.600000
764      4.300000

...
149569    4.900000
149577    5.000000
149654    4.404584
149734    4.404584
149884    4.100000
Name: Customer Rating, Length: 896, dtype: float64, 681    3.700000
742      4.200000
1131     4.200000
1247     4.404584
1401     5.000000

...
149256    4.700000
149409    4.200000
149492    4.404584
149769    4.404584
149980    4.404584
Name: Customer Rating, Length: 866, dtype: float64, 158    5.000000
297      4.600000
330      4.300000
879      5.000000
912      4.404584

...
149536    4.600000
149699    3.700000
149710    4.300000
149895    3.900000
149909    3.300000
Name: Customer Rating, Length: 829, dtype: float64, 591    4.600000
791      4.404584
848      4.404584
872      5.000000
1081     3.700000

...
149208    4.700000
149434    4.100000
149511    4.400000
149568    4.200000
149922    4.600000
Name: Customer Rating, Length: 800, dtype: float64, 33    4.400000
206      4.900000

```

```

669      4.400000
720      4.404584
722      4.900000
...
149486    4.200000
149572    5.000000
149576    4.404584
149714    4.200000
149721    4.600000
Name: Customer Rating, Length: 855, dtype: float64, 272      4.800000
438      4.500000
604      4.700000
707      4.404584
970      4.600000
...
148607    4.404584
149025    4.404584
149525    4.500000
149888    4.404584
149928    4.404584
Name: Customer Rating, Length: 901, dtype: float64, 109      4.900000
395      4.404584
775      4.800000
777      4.300000
832      3.300000
...
149205    4.200000
149350    4.404584
149539    4.700000
149633    4.900000
149707    3.800000
Name: Customer Rating, Length: 836, dtype: float64, 144      4.404584
196      4.900000
304      4.600000
365      4.500000
513      4.404584
...
149245    3.900000
149284    5.000000
149571    4.404584
149708    4.300000
149740    4.404584
Name: Customer Rating, Length: 786, dtype: float64, 242      4.404584
292      4.404584
476      4.100000
833      4.800000
847      4.400000
...
148118    5.000000

```

```

148419    4.404584
149143    3.900000
149342    3.900000
149437    4.404584
Name: Customer Rating, Length: 871, dtype: float64, 142    4.500000
186       4.200000
412       4.404584
510       4.404584
606       4.404584
...
149273    3.400000
149461    4.404584
149552    4.404584
149598    4.500000
149883    4.404584
Name: Customer Rating, Length: 861, dtype: float64, 774    4.800000
918       4.200000
1403      4.404584
1609      4.200000
1708      4.600000
...
149165    4.404584
149285    4.700000
149499    4.404584
149554    4.404584
149578    4.800000
Name: Customer Rating, Length: 817, dtype: float64, 221    4.600000
587       4.404584
790       4.400000
855       4.300000
1022      4.200000
...
149500    4.500000
149509    4.300000
149592    4.600000
149605    5.000000
149685    4.700000
Name: Customer Rating, Length: 887, dtype: float64, 398    4.404584
440       4.100000
446       4.404584
801       4.404584
1454      4.700000
...
149417    4.900000
149419    4.404584
149501    4.404584
149681    4.200000
149932    4.404584
Name: Customer Rating, Length: 815, dtype: float64, 176    4.700000

```

802	4.400000
874	4.700000
1026	4.600000
1064	4.600000
...	
148804	5.000000
148952	4.404584
149142	4.600000
149315	4.404584
149474	4.200000
Name: Customer Rating, Length: 861, dtype: float64, 326	
343	4.200000
376	4.500000
386	4.404584
526	4.404584
...	
149470	4.900000
149526	4.900000
149743	4.600000
149797	4.404584
149929	4.404584
Name: Customer Rating, Length: 877, dtype: float64, 183	
478	4.600000
556	4.400000
571	4.000000
612	4.300000
...	
149609	4.600000
149646	4.404584
149746	4.404584
149806	4.500000
149843	4.404584
Name: Customer Rating, Length: 873, dtype: float64, 42	
43	4.404584
541	4.900000
546	4.600000
635	4.404584
...	
148986	4.600000
149013	4.404584
149278	4.200000
149397	4.600000
149887	4.404584
Name: Customer Rating, Length: 848, dtype: float64, 122	
283	4.300000
364	3.200000
378	4.900000
423	3.700000
...	

```

149221    4.700000
149341    4.404584
149487    4.600000
149897    4.404584
149946    4.200000
Name: Customer Rating, Length: 870, dtype: float64, 91    4.300000
189       4.700000
220       3.700000
711       4.404584
1238      4.200000
...
149483    4.404584
149506    4.404584
149513    4.600000
149914    3.200000
149930    4.500000
Name: Customer Rating, Length: 870, dtype: float64, 264    4.700000
339       3.700000
586       4.500000
849       4.100000
860       4.600000
...
149119    3.600000
149538    4.404584
149662    4.404584
149753    4.800000
149839    4.404584
Name: Customer Rating, Length: 817, dtype: float64, 92    3.800000
131       4.600000
298       4.404584
869       4.600000
1108      4.600000
...
149182    4.404584
149336    4.400000
149540    4.404584
149611    4.100000
149938    4.404584
Name: Customer Rating, Length: 829, dtype: float64, 216    4.900000
900       4.404584
907       4.404584
979       4.404584
1101      4.800000
...
149462    3.900000
149608    4.900000
149896    4.404584
149900    4.404584
149913    4.200000

```

```

Name: Customer Rating, Length: 906, dtype: float64, 39      4.404584
75      4.500000
141     4.600000
356     3.800000
452     4.600000
...
149131   4.404584
149236   4.800000
149556   4.900000
149677   4.300000
149683   4.900000
Name: Customer Rating, Length: 872, dtype: float64, 225      4.404584
285     4.404584
424     4.300000
451     4.404584
505     4.200000
...
149495   4.404584
149759   4.404584
149767   4.500000
149918   5.000000
149969   4.200000
Name: Customer Rating, Length: 883, dtype: float64, 83       4.800000
254     4.404584
602     4.300000
754     4.404584
769     4.100000
...
149103   4.600000
149156   4.900000
149188   4.900000
149546   4.500000
149621   4.500000
Name: Customer Rating, Length: 869, dtype: float64, 172      4.404584
243     4.404584
554     4.200000
782     4.404584
785     4.600000
...
149668   4.500000
149749   4.200000
149817   4.200000
149824   4.400000
149857   4.300000
Name: Customer Rating, Length: 802, dtype: float64, 333      3.700000
353     3.900000
363     4.700000
460     4.500000
524     4.600000

```

```

...
148941    4.404584
149294    5.000000
149523    4.600000
149560    4.404584
149678    5.000000
Name: Customer Rating, Length: 841, dtype: float64, 121    4.404584
132       4.404584
289       4.404584
390       4.200000
781       4.500000
...
149116    4.400000
149179    4.100000
149521    4.100000
149659    4.800000
149731    3.900000
Name: Customer Rating, Length: 868, dtype: float64, 117    4.400000
425       4.600000
507       4.404584
838       4.404584
1350      4.404584
...
149305    4.404584
149657    4.300000
149859    4.404584
149874    4.100000
149974    4.700000
Name: Customer Rating, Length: 849, dtype: float64, 30    4.404584
614       4.404584
685       4.600000
1098      4.000000
1175      4.900000
...
148793    4.404584
149410    5.000000
149726    4.900000
149921    4.600000
149991    4.300000
Name: Customer Rating, Length: 846, dtype: float64, 589    5.000000
749       4.900000
805       4.100000
808       4.404584
946       4.500000
...
148600    4.404584
148719    4.800000
149032    4.404584
149634    4.300000

```

```

149674    4.800000
Name: Customer Rating, Length: 848, dtype: float64, 61    3.800000
104      4.300000
110      4.800000
168      4.700000
311      4.600000
...
149083    4.200000
149367    4.404584
149454    3.900000
149750    4.404584
149890    4.404584
Name: Customer Rating, Length: 841, dtype: float64]

# running anova test

from scipy.stats import f_oneway

f_stat, p_value = f_oneway(*groups)

print(f'f_stat is {f_stat} and p_value is {p_value}')

f_stat is 0.9907593048161998 and p_value is 0.5203556983699706

```

Here the **p_value** is 0.52 which is above 0.05, it fails to reject null hypothesis. So we can say drop location doesn't affect customer's rating much.

Thing	Meaning
<code>groupby('Drop Location')</code>	Breaks the big DataFrame into smaller groups based on locations
<code>g['Customer Rating']</code>	Selects only the rating column from each small group
<code>[... for _, g in ...]</code>	Creates a list of ratings for all locations
<code>groups</code>	A list of all ratings grouped by location
Numbers like 11, 231, 331	Original DataFrame row indexes
Locations	Stored separately as group names (<code>keys()</code>)